

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION

ORDER NO. 91-082

SITE CLEANUP REQUIREMENTS FOR:

DEPARTMENT OF THE ARMY,  
PRESIDIO OF SAN FRANCISCO

For: BUILDINGS 231 AND 937, PRESIDIO OF SAN FRANCISCO, SAN  
FRANCISCO COUNTY

**FINDINGS**

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board) finds that:

1. **SITE DESCRIPTION & BACKGROUND** The Department of the Army (Army) owns and operates the Presidio of San Francisco (PSF) which is situated at the northern tip of the San Francisco Peninsula in the City of San Francisco. PSF is an active Army installation and is headquarters for the Sixth Army. Additionally, the Letterman Army Medical Center, Letterman Army Institute of Research, and Golden Gate Army Reserve Center are all located on the Presidio grounds.

The Presidio comprises approximately 1,416 acres of rolling hills, grass covered sand dunes, rugged sea cliffs and low-lying fill and beach areas. The installation, noted for its picturesque views; abundant and diverse flora; and rich history, was brought under National Park status in the 1970's as part of the Golden Gate National Recreational Area (GGNRA). In response to 1988 Federal legislation, PSF as an Army installation, is in the process of closing all Army operations with eventual control of the property reverting to the National Park Service (NPS). The Army is responsible for abating and remediating all releases of toxic substances before NPS takes full control of the land for use as a National park.

Pollution of concern is located at and adjacent to two separate buildings: Building 231 and Building 937 (hereinafter the two building locations will be collectively be referred to as the "Site"). Building 231 is a former gas station and is located on Halleck Street and is up-gradient of Crissy Field and the Bay [Attachment 1].

Building 937, was constructed as an aircraft hanger but is now used for vehicle maintenance. Building 937 is located at the west end of Crissy Field near the Fort Point Coast Guard Station. Underground tanks and/or piping associated with the tanks located at Buildings 231 and 937, are believed to have contributed to soil and groundwater pollution found at the Site.

2. **REGULATORY STATUS** The Army is a discharger because of their ownership and operation of a gas station and a vehicle maintenance facility where releases of pollutants have occurred. The Army knew or should have known of the existence of the discharges and they had ability to prevent the discharges. Pollutants discharged have affected the groundwater beneath the buildings and pollutants have migrated laterally and affected adjacent soil and groundwater at the Site. The Board has not taken prior action against the Army at PSF. PSF has acted in a recalcitrant manner towards the requests of Regional Board staff for technical information (see Site History, below).
3. **SITE HISTORY** The Army has owned and operated Buildings 231 and 937, for at least 40 years. The Army has always been the operator of the gas station at Building 231 and the Army has always been the sole operator Building 937.

On June 22, 1989, RWQCB notified PSF of responsibilities at Building 231 and requested quarterly progress reports; on November 22, 1989, RWQCB requested a work-plan and schedule for cleanup at Building 231; and on April 23, 1990, RWQCB commented on draft work-plan for Remedial Investigation and notified USATHMA (cc:PSF) of continued Water Code non-compliance. All requests were made pursuant to Section 13267 of the California Water Code.

In April 1990, Regional Board staff received, from USATHMA, the Enhanced Preliminary Assessment describing contamination at Building 937. PSF had conducted two studies of groundwater pollution at Building 937, but the Army failed to submit those studies to the Board. The first study was conducted by U.S. Army Environmental Hygiene Agency shortly after discovery of pollution in 1981. The Environmental Hygiene Agency's investigation included the installation, measurement and sampling of 10 groundwater monitoring wells at Building 937. These wells were apparently abandoned or lost and later, and in 1984, the Environmental Hygiene Agency conducted an additional investigation which included installation, measurement and sampling of 23 groundwater monitoring wells. In 1986 Stetson Engineers was hired to further study the existing data generated by the earlier studies for the Building 937 location. The Stetson report recommended further action.

In early 1990, PSF hired Martech, Inc. to install a sophisticated soil and groundwater cleanup system at Building 231. Yet, there are no documentation of the system's design, nor are there any supporting documents describing groundwater contamination at the Site. On June 13, 1990, Regional Board staff met with PSF staff to discuss progress at Building 231 and 937 and on August 2, 1990, Regional Board staff sent a letter to PSF reiterating the need for documentation of investigation and remediation at Buildings 231 and 937. PSF staff have reported that the Army is currently in dispute with Martech over contractual obligations.

4. **HYDROGEOLOGY** Building 231 is located over modern beach deposits, man-made fill and fractured bedrock of the Colma formation. Groundwater at Building 231 was found to be at eight feet below ground surface (bgs) in 1988. Building 231 is approximately 1,000 feet south of the Bay and groundwater flow direction is believed to be generally toward Crissy Field and the Bay.

Building 937 is located over modern beach deposits and manmade fill and borings at this location revealed that sandy deposits extend to a depth of at least 39 feet bgs. Groundwater has been found at approximately six feet below ground surface. Crissy Field was once the location of a salt marsh and dune system. Bedrock cut from the hillside behind Building 937, as well as building rubble and refuse, was used as fill along the Bay to create the Crissy Field airstrip. Building 937 is approximately 400 feet from the Bay and groundwater beneath Building 937 is believed to flow toward the Bay.

Drinking water at PSF is supplied almost totally by groundwater and surface water pumped at the base of Lobos Creek. Lobos Creek is believed to drain aquifer(s) under the Northwestern portion of San Francisco. Buildings 231 and 937 are topographically isolated from Lobos Creek at are not in hydraulic connection with the Creek. Groundwater near Crissy Field meets the definition of a "potential source of drinking water" pursuant to Policy No. 88-63 and pollutants at Crissy Field pose a direct threat to Bay water quality. No aquifer tests have been conducted in the areas of the two buildings.

#### 5. **SUBSURFACE INVESTIGATIONS**

**Building 937:** There are three known underground tanks located at Building 937. Two 1,000-gallon capacity and one 500-gallon capacity underground tanks are located adjacent to the building. There may be other tanks or sumps located under the floor of the building. There is no record that PSF notified the Board of subsurface release(s) at Building 937. The discovery of the release, and subsequent investigations in

1981, 1984, and 1986 at Building 937 were described in the Enhanced Preliminary Assessment (USATHMA, 1989).

In 1981 the Army found between 8 inches and six feet of free product under Building 937. The material was identified as "bulk oil" which had leaked from a filler pipe leading to the waste tank. The waste tank was used to diesel fuel, waste oils, paint and lacquer thinner carburetor cleaner and decreasing solvents. Oil found floating on the water table at Building 937 was analyzed and found to contain volatile and non-volatile pollutants including: benzene, ethylbenzene, chlorobenzene, toluene, and methylene chloride. Semi-volatile compounds detected in the oil sample include p-chloro-m-cresol, naphthalene, and phenanthrene.

Compounds detected in groundwater from wells located at Building 937 include PCE 1,1,1,-TCA, 1,1-DCA, 1,2,-DCA, 1,2-DCE, benzene, chlorobenzene, ethylbenzene, 2-chloroethylvinyl ether, toluene, naphthalene and various phthalates. In addition, xylenes, phenols and alcohols were also present in groundwater.

Building 231: In December of 1988 gross soil contamination was found at Building 231 when four 10,000-gallon underground tanks were removed. Martech, consultants for the Army, subsequently removed 4,000 gallons of floating product from the water table which leaked from one or more of the tanks and/or associated piping. According to a "Short Summary Report" submitted by Martech to the Regional Board in December of 1988, approximately 4,000 gallons of floating hydrocarbon product was removed from the water table at this location. In a subsequent work-plan dated November 8, 1989, some further soil sampling data was presented which showed as much as 2,500 ppm of Total Petroleum Hydrocarbons (TPH) (i.e., 0.25% by weight) was present in soil at Building 231. These soil samples were taken from eight soil borings and they were found to contain benzene at 17.0 ppm, toluene at 130 ppm and xylene at 290 ppm. After the drilling these borings, Martech installed five monitoring wells at Building 231 and measured product thickness; however no samples of groundwater were ever analyzed.

#### 6. REMEDIAL INVESTIGATION/FEASIBILITY STUDY

The United States Army Toxics and Hazardous Materials Agency (USATHMA) is currently conducting a Remedial Investigation/Feasibility study (RI/FS) of PSF as a part of Base Closure and subsequent transfer to the National Park Service. The RI work-plan included drilling of numerous borings and installation of groundwater monitoring wells at and near both Building 231 and 937. The purpose of the RI was to investigate base-wide contamination and not necessarily focus

on pollution at Buildings 231 and 937.

7. **GROUNDWATER PLUMES** Groundwater beneath Building 937 is contaminated and floating product is believed to be migrating away from the source area toward northeast and the Bay. No specific investigation of groundwater pollution migration at Building 231 has been conducted. However some lateral definition may be determined by the recent sampling of monitoring wells constructed by USATHMA during the 1990 RI.
8. **INTERIM REMEDIAL ACTIONS** Interim remedial action was taken at building in that 4,000 gallons of floating petroleum product was removed from the water table. No other interim remedial measures have occurred.
9. **SCOPE OF THIS ORDER** This Order contains tasks for completion of groundwater characterization at the Site; implementation and evaluation of interim remedial actions for on-site and off-site soil and groundwater pollution, and evaluation and implementation of final cleanup actions. These tasks are necessary to alleviate the threat to surface and groundwater posed by the migration of chemicals and to provide a substantive technical basis for designing and evaluating the effectiveness of final cleanup alternatives.
10. **BASIN PLAN** The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on December 17, 1986. The Basin Plan contains water quality objectives and beneficial uses for the central San Francisco Bay and contiguous surface and groundwaters.
11. **GROUNDWATER BENEFICIAL USE** Groundwater at Buildings 231 and 937 currently have no existing use. The potential beneficial uses include:
  - a. Industrial process water supply
  - b. Industrial service water supply
  - c. Municipal and domestic water supply
  - d. Agricultural water supply
12. **SURFACE WATER BENEFICIAL USE** The existing and potential beneficial uses of the Central Bay and Oakland Estuary include:
  - a. Contact and non-contact water recreation
  - b. Wildlife habitat
  - c. Preservation of rare and endangered species
  - d. Estuarine habitat
  - e. Fish spawning and migration
  - f. Industrial process and service supply
  - g. Shell fishing
  - h. Navigation

i. Ocean commercial and sport fishing

13. The Dischargers have caused or permitted, and threaten to cause or permit waste to be discharged or deposited where it is or probably will be discharged to waters of the State and create or threaten to create a condition of pollution or nuisance.
14. This action is an Order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of the CEQA pursuant to Section 15321 of the Resources Agency Guidelines.
15. The Board has notified the Dischargers, responsible parties and interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharge and has provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.
16. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the Dischargers shall cleanup and abate the effects described in the above findings as follows:

A. SPECIFICATIONS

1. Remediation Activities: The Dischargers shall conduct site investigation, monitoring and remediation activities as needed to define the current local hydrogeologic conditions, to define the lateral and vertical extent of soil and groundwater pollution, and to remediate soil and groundwater pollution. Should monitoring results show evidence of pollutant migration, additional characterization and remediation may be required.
2. Nuisance Clause: The storage, handling, treatment or disposal of soil or groundwater containing pollutants shall not create a nuisance as defined in Section 13050(m) of the California Water Code.
3. Clean-up Goals - Soils: The cleanup goal for source-area soils are as follows. For volatile organic compounds the cleanup level shall be no greater than 1 ppm. All samples shall be analyzed using applicable EPA analytical methods or methods shown through State or peer review approval to be equivalent to EPA methods.

Alternate soil cleanup goals may be proposed based on

site specific data. If higher levels of pollutants to be left in soils are proposed, the Dischargers must demonstrate that cleanup to the aforementioned levels is infeasible, that the alternate levels will not threaten the quality of waters of the State, and that human health and the environment are protected. Final cleanup goals for source-area soils must be acceptable to the Executive Officer. If any chemicals are left in the soil, follow up groundwater monitoring will be required.

4. **Clean-up Goals - Groundwater:** Final cleanup levels and goals for polluted groundwater, including sources of drinking water, on-site and off-site, shall be background water quality if feasible, in accordance with the State Water Resources Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California", and other applicable standards and shall be based on an evaluation of the cost, effectiveness and a risk assessment to determine affect on human health and the environment, and shall be approved by the Board. These levels shall have a goal of reducing the mobility, toxicity, and volume of pollutants.
5. **Reclamation:** If groundwater extraction and treatment is considered as an alternative, the feasibility of water reuse, re-injection, and disposal to the sanitary sewer must be evaluated. Based on the Regional Board Resolution 88-160, the Dischargers shall optimize, with a goal of 100%, the reclamation or reuse of groundwater extracted as a result of cleanup activities. The Dischargers shall not be found in violation of this Order if documented factors beyond the Dischargers' control prevent the Dischargers from attaining this goal, provided the Dischargers have made a good faith effort to attain this goal. If reuse or re-injection is part of a proposed alternative, an application for Waste Discharge Requirements may be required. If discharge to waters of the State is part of a proposed alternative, an application for an NPDES permit must be completed and submitted, and must include the evaluation of the feasibility of water reuse, re-injection, and disposal to the sanitary sewer.

**B. PROHIBITIONS**

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect the beneficial uses of the waters of the State is prohibited.
2. Further significant migration of pollutants through

subsurface transport to waters of the State is prohibited.

3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of pollutants are prohibited.

C. **PROVISIONS** The Dischargers shall comply with the Prohibitions and Specifications above, in accordance with the following time schedule and tasks:

1. **GENERAL TASKS AND COMPLETION DATES.**

- a. TASK: SUBMIT SAMPLING AND ANALYSIS, AND QUALITY ASSURANCE PROJECT PLANS.

Submit Sampling and Analysis, and Quality Assurance Project Plans for projected on and off-site sampling, acceptable to the Executive Officer.

COMPLETION DATE: July 1, 1991

- b. TASK: SUBMIT A GROUNDWATER MONITORING PLAN.

Submit a groundwater monitoring plan, acceptable to the Executive Officer, that addresses monitoring of groundwater from wells representative of conditions found at the site. The plan shall include monitoring of groundwater in areas where gasoline, petroleum products and other chemicals have been detected. This monitoring plan may be modified based upon results of additional pollution investigations.

COMPLETION DATE: July 1, 1991

2. **BUILDING 231 TASKS AND COMPLETION DATES**

- a. SUBMIT A SITE REMEDIATION PLAN ADDRESSING REMEDIATION OF GROUNDWATER POLLUTION AT, AND EMANATING FROM BUILDING 231.

Submit a Site Remediation Plan acceptable to the Executive Officer that fully describes remedial actions to be taken to control, abate and/or remove pollution found in groundwater at, and emanating from Building 231. The plan shall include a discussion of all existing data, a review of the effectiveness of any existing interim remedial measures including the existing groundwater and vapor extraction system. In addition the Plan

shall include a comprehensive schedule for implementation of the existing groundwater and vapor extraction system.

COMPLETION DATE: June 15, 1991

b. IMPLEMENTATION OF REMEDIAL ACTIONS: GROUNDWATER.

Submit a technical report acceptable to the Executive Officer documenting in detail how remedial actions at Building 231 have been implemented.

COMPLETION DATE: July 15, 1991.

c. SUBMIT A REPORT OF SOILS INVESTIGATION.

Submit a report acceptable to the Executive Officer describing the extent of soil pollution at Building 231. This report shall include all analytical data, chain of custody and documentation of testing using applicable EPA methods or equivalent methods.

COMPLETION DATE: July 15, 1991.

d. SUBMIT A REPORT ON THE EFFECTIVENESS OF FINAL REMEDIAL ACTION: GROUNDWATER AND SOILS.

Submit a technical report acceptable to the Executive Officer which evaluates the effectiveness of the interim remedial actions for the soil and groundwater at Building 231. This report should document implementation of any additional measures necessary to fully contain the groundwater.

COMPLETION DATE: January 1, 1992.

3. BUILDING 937, TASKS AND COMPLETION DATES.

a. TASK: WORK PLAN FOR SOIL AND GROUNDWATER POLLUTION CHARACTERIZATION AT BUILDING 937.

Submit a work plan acceptable to the Executive Officer which describes a hydrogeologic investigation that will determine the lateral and vertical extent of soil and groundwater pollution at, and emanating from Building 937. This plan shall include a proposal to investigate groundwater found under Crissy Field in order to delineate the extent of groundwater pollution. This plan shall

include a complete schedule for implementation and remediation.

COMPLETION DATE: August 15, 1991

b. TASK: COMPLETE SOIL AND GROUNDWATER POLLUTION CHARACTERIZATION.

Submit a technical report acceptable to the Executive Officer containing the results of a hydrogeologic investigation to which fully defines the lateral and vertical extent of soil and groundwater pollution in the vicinity of Building 937 which were affected by releases from the Building. This report shall at a minimum include soil and groundwater sampling and analysis and a comprehensive evaluation of existing data for this area. The report shall fully describe the location of pollutants, pollutant source areas, all underground tanks, and the hydraulic properties of affected water-bearing zones. The report shall also contain a groundwater monitoring program, including sampling and analysis and quality assurance plans.

COMPLETION DATE: 15 weeks after approval of C.3.a.

c. TASK: SUBMIT A REMEDIAL ACTION FEASIBILITY STUDY.

Submit a technical report acceptable to the Executive Officer which contains a detailed evaluation of all remedial alternatives in order to select interim remedial actions for soil and groundwater pollution existing at and adjacent to Building 937. The report shall include a detailed screening of technical alternatives for soil and groundwater pollution remediation. The study shall include an assessment of 1) potential effectiveness, 2) technical and administrative feasibility, and 3) projected costs of remedial action. The study shall include a rationales for both the alternatives selected for screening and a detailed explanation of the alternatives selected. Innovative and emerging technologies shall be included in the technology screening but may be addressed separately from other technologies. The study shall contain recommendations for implementation, and a plan and schedule for implementation of the proposed interim remedial actions.

COMPLETION DATE: 8 weeks after approval of C.3.b.

- d. TASK: IMPLEMENTATION OF PHASE 1 INTERIM REMEDIAL ACTION IN AFFECTED GROUNDWATER ZONES.

Submit a technical report acceptable to the Executive Officer documenting implementation of interim remedial actions for "free" and floating material found in the water-bearing zones at the Site that have been affected by pollutants that have emanated from Building 937.

COMPLETION DATE: 10 weeks after approval of C.3.c

- e. SUBMIT A REPORT ON THE EFFECTIVENESS OF PHASE II REMEDIAL ACTION: GROUNDWATER AND SOILS.

Submit a technical report acceptable to the Executive Officer which evaluates the effectiveness of the interim remedial actions for the soil and groundwater at Building 937. This report should document implementation of any additional measures necessary to fully contain dissolved-phase pollutants found in the groundwater.

COMPLETION DATE: 14 weeks after approval of the C.3.c.

4. If the dischargers are delayed, interrupted or prevented from meeting any of the completion dates specified in this Order, the dischargers shall promptly notify the Executive Officer prior to the due date.
5. The Dischargers shall submit to the Regional Board acceptable reports on compliance with the requirements of this Order, and acceptable activity monitoring reports that contain descriptions and results of work performed. These reports are to be submitted according to a program prescribed by the Regional Board and outlined below.
- a. **ON A QUARTERLY BASIS**, technical reports on status of compliance with this Order shall be submitted by each Discharger to the Board, commencing on July 20 1991. Each **quarterly status** report shall cover the previous calendar quarter and shall include, but are not limited to, the following:
- i. Summary of work completed since submittal of the previous report, and work projected to be completed by the time of the next report.
- ii. Identification of any obstacles which may

threaten compliance with the schedule of this Order and what actions are being taken to overcome these obstacles.

- b. **ALSO, ON A QUARTERLY BASIS**, technical reports on soil and groundwater monitoring shall be submitted by each Discharger to the Board, commencing on July 20, 1991, and covering the previous calendar quarter. Each **quarterly monitoring** report shall include, but need not be limited to, the following information:
    - i. Results of quarterly free product measurements and water quality sampling analyses for all on-site wells.
    - ii. Quarterly updated water table and piezometric surface maps, based on the most recent water level measurements for all affected water bearing zones for all on-site and off-site wells.
    - iii. A cumulative tabulation of volume of extracted groundwater, quarterly chemical analysis results for all groundwater extraction wells, and pounds of pollutants removed.
    - iv. A cumulative tabulation of all well construction details, and quarterly water level measurements.
    - v. Results of soil vapor sampling analyses, soil pollution plume maps based on these results, a cumulative tabulation of chemical analysis results for all soil vapor extraction wells, and a cumulative tabulation of pounds of chemicals removed.
  - c. **ON AN ANNUAL BASIS**, technical reports on the progress of compliance with all requirements of this Order shall be submitted to the Board by each Discharger, due on July, of each year beginning in 1992, and covering the previous year. Annual reports may include quarterly reports due concurrently. The progress reports shall include, but need not be limited to, progress on the site investigation and remedial actions, and operation of interim and final remedial actions and /or systems.
4. All hydrogeological plans, specifications, reports, and documents shall be signed by or stamped with the seal of


a registered geologist or professional engineer, or a certified engineering geologist.

5. All samples shall be analyzed by State certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain Quality Assurance/Quality Control records for Board review.
6. The Dischargers shall maintain in good working order, and operate, as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.
7. Copies of all correspondence, reports, and documents pertaining to compliance with this Order, shall be provided to the following agencies:
  - a. San Francisco County Department of Public Health, Environmental Health Division, Toxics and Health and Safety Bureau.
  - b. Office of the San Francisco City Attorney, Attention: Ms. Elaine Warren.
  - c. State Department of Health Services/Toxic Substances Control Division-Region 2, Site Mitigation Section: Attention Mr. Chen Kao.
8. The Dischargers shall permit the Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code:
  - a. Entry upon premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order.
  - b. Access to copy any records required to be kept under the terms and conditions of this Order.
  - c. Inspection of any monitoring equipment or methodology implemented in response to this Order.
  - d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the dischargers.
9. The Dischargers shall file a report on any changes in Site occupancy and ownership associated with the facility described in this Order.
10. If any hazardous substance is discharged in or on any

waters of the state, or discharged and deposited where it is, or probably will be discharged in or on any waters of the state in quantities required to be reported pursuant to Water Code Sections 13271 and 13272, each Discharger shall report such discharge to this Regional Board, at (415) 464-1255 on weekdays during office hours from 8 a.m. to 5 p.m., and to the Office of Emergency Services at (800) 852-7550 during non-business hours. A written report shall be filed with the Regional Board within five (5) working days and shall contain information relative to: the nature of waste or pollutant, quantity involved, duration of incident, cause of spill, Spill Prevention, Control, and Countermeasure Plan (SPCC) in effect, if any, estimated size of affected area, nature of effect, corrective measures that have been taken or planned, and a schedule of these activities, and persons/agencies notified.

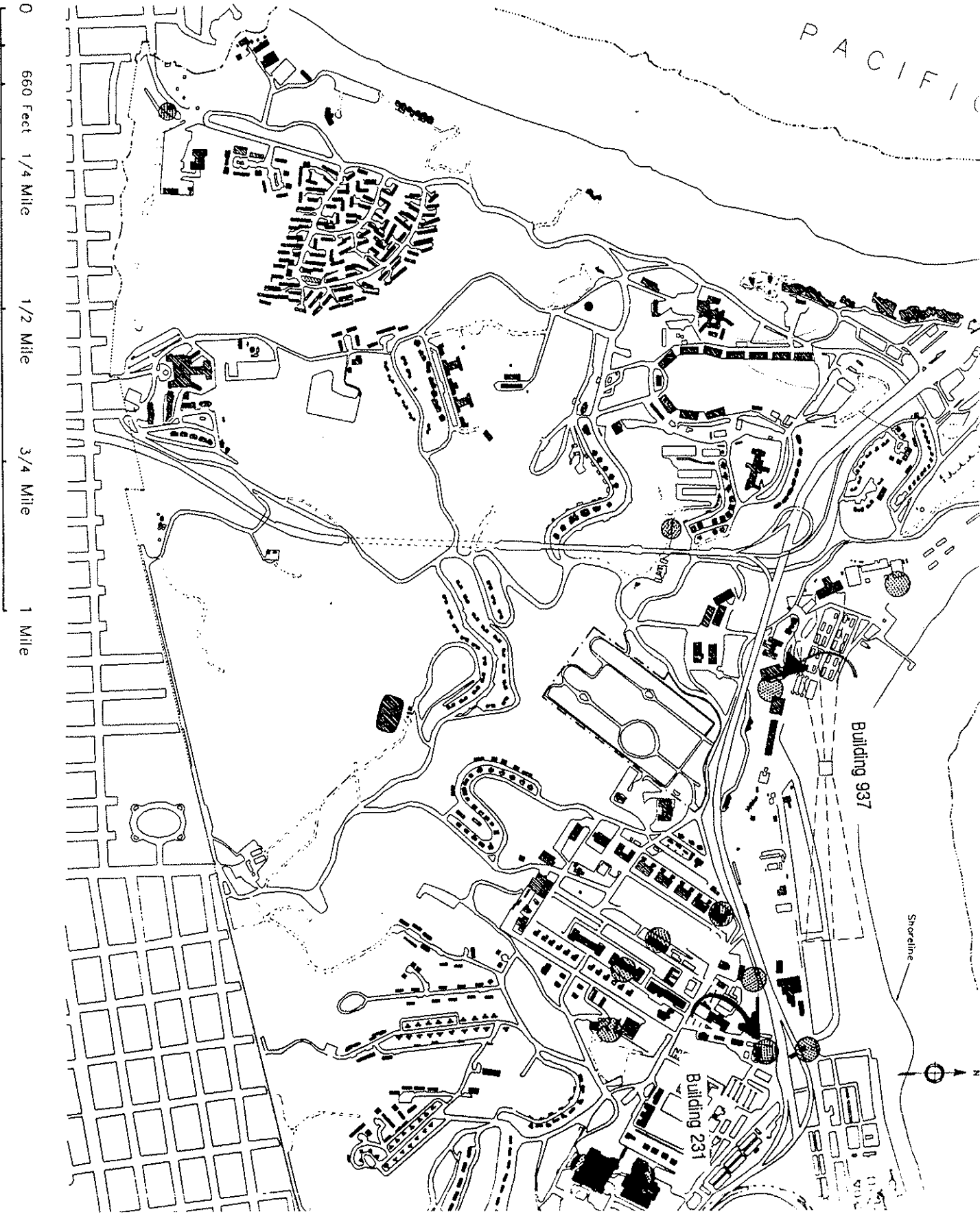
11. The Board will review this Order periodically and may revise the requirements when necessary.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on May 15, 1991.

  
Steven R. Ritchie  
Executive Officer

D. APPENDICES

A. Site Map.



SCALE

FIGURE 3-4 Registered Underground Storage Tanks at PSF